

WE CLAIM:

1. An IL-16 antagonist peptide.

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2. An IL-16 antagonist peptide consisting of a sequence selected from the group consisting of RRKS (SEQ ID NO:2), RRTS (SEQ ID NO:3), KRKS (SEQ ID NO:4), RRAS (SEQ ID NO:5), RRKA (SEQ ID NO:6) and RRTA (SEQ ID NO:7).

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3. An IL-16 antagonist peptide consisting of a sequence selected from the group consisting of RRKSLQ (SEQ ID NO:17), RRTSLQ (SEQ ID NO:18), RRKSCM (SEQ ID NO:19), KRKSMQ (SEQ ID NO:20), RRASLQ (SEQ ID NO:21), RRKALQ (SEQ ID NO:22) and RRTALQ (SEQ ID NO:23).

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4. An IL-16 antagonist peptide consisting of a sequence selected from the group consisting of RRKSLQSK (SEQ ID NO: 24), RRTSLQCK (SEQ ID NO:25), RRKSLQPK (SEQ ID NO:26), RRKSCMSK (SEQ ID NO:27), KRKSMQSK (SEQ ID NO:28), RRASLQSK (SEQ ID NO:29), RRKALQSK (SEQ ID NO:30), RRTALQCK (SEQ ID NO:31) and RRASLQCK (SEQ ID NO:32).

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5. An IL-16 antagonist peptide consisting of a sequence selected from the group consisting of RRTSLQCKQTTASADS (SEQ ID NO:34), RRASLQSKETTAAGDS (SEQ ID NO:35), RRKALQSKETTAAGDS (SEQ ID NO:36), RRTALQCKQTTASADS (SEQ ID NO:37) and RRASLQCKQTTASADS (SEQ ID NO:38).

6. An IL-16 antagonist peptide comprising $X_{aa0}RX_{aa1}X_{aa2}$ (SEQ ID NO:1), wherein X_{aa0} is Arg or Lys, and X_{aa1} and X_{aa2} are any amino acids.

7. The IL-16 antagonist peptide of Claim 6, wherein X_{aa1} is selected from Lys, Thr, or Ala; and X_{aa2} is selected from Serine or Ala.

8. The IL-16 antagonist peptide of Claim 6, wherein X_{aa0} is Arg.

9. The IL-16 antagonist peptide of Claim 8, wherein X_{aa1} is selected from Lys, Thr, or Ala; and X_{aa2} is Ser or Ala.

10. The IL-16 antagonist peptide of Claim 6, wherein X_{aa0} is Lys.

11. The IL-16 antagonist peptide of Claim 10, wherein X_{aa1} is selected from Lys, Thr, or Ala; and X_{aa2} is Ser or Ala.

12. The IL-16 antagonist peptide of Claim 8 or 10, wherein the tetrameric sequence coincides with the native sequence of a mammalian IL-16.

13. An IL-16 antagonist peptide comprising a sequence selected from the group consisting of RRKS (SEQ

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ID NO:2), RRTS (SEQ ID NO:3), KRKS (SEQ ID NO:4), RRAS (SEQ ID NO:5), RRKA (SEQ ID NO:6) and RRTA (SEQ ID NO:7).

14. An IL-16 antagonist peptide comprising $X_{aa1}X_{aa2}X_{aa0}R$ (SEQ ID NO:8), wherein X_{aa0} is Arg or Lys, and X_{aa1} and X_{aa2} are any amino acids.

15. The IL-16 antagonist peptide of Claim 14, wherein X_{aa1} is Val and X_{aa2} is Ile or Leu.

16. The IL-16 antagonist peptide of Claim 14, wherein X_{aa0} is Arg.

17. The IL-16 antagonist peptide of Claim 16, wherein X_{aa1} is Val and X_{aa2} is Ile or Leu.

18. The IL-16 antagonist peptide of Claim 14, wherein X_{aa0} is Lys.

19. The IL-16 antagonist peptide of Claim 18, wherein X_{aa1} is Val and X_{aa2} is Leu or Ile.

20. The IL-16 antagonist peptide of Claim 16 or 18, wherein the tetrameric sequence coincides with the native sequence of a mammalian IL-16.

21. An IL-16 antagonist peptide comprising a sequence selected from the group consisting of VIRR (SEQ ID NO:9), VLRR (SEQ ID NO:10) and VIKR (SEQ ID NO:11).

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22. An IL-16 antagonist peptide comprising $X_{aa1}X_{aa0}RX_{aa2}$ (SEQ ID NO:12), wherein X_{aa0} is Arg or Lys, and X_{aa1} and X_{aa2} are any amino acids.

5 23. The IL-16 antagonist peptide of Claim 22, wherein X_{aa1} is Ile or Leu and X_{aa2} is Lys, Thr or Ala.

24. The IL-16 antagonist peptide of Claim 22, wherein X_{aa0} is Arg.

10 25. The IL-16 antagonist peptide of Claim 24, wherein X_{aa1} is selected from Ile or Leu and X_{aa2} is Lys, Thr or Ala.

15 26. The IL-16 antagonist peptide of Claim 22, wherein X_{aa0} is Lys.

20 27. The IL-16 antagonist peptide of Claim 26, wherein X_{aa1} is selected from Leu or Ileu; and X_{aa2} is Lys, Thr or Ala.

25 28. The IL-16 antagonist peptide of Claim 24 or 26, wherein the tetrameric sequence coincides with the native sequence of a mammalian IL-16.

29. An IL-16 antagonist peptide comprising a sequence selected from the group consisting of IRRK (SEQ ID NO:13), IRRT (SEQ ID NO:14), LRRK (SEQ ID NO:15) and IKRK (SEQ ID NO:16).

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30. An IL-16 antagonist peptide comprising a sequence selected from the group consisting of RRKSLQ (SEQ ID NO:17), RRTSLQ (SEQ ID NO:18), RRKSCM (SEQ ID NO:19), KRKSMQ (SEQ ID NO:20), RRASLQ (SEQ ID NO:21), RRKALQ (SEQ ID NO:22) and RRTALQ (SEQ ID NO:23).

31. An IL-16 antagonist peptide comprising a sequence selected from the group consisting of RRKSLQSK (SEQ ID NO:24), RRTSLQCK (SEQ ID NO:25), RRKSLQPK (SEQ ID NO:26), RRKSCMSK (SEQ ID NO:27), KRKSMQSK (SEQ ID NO:28), RRASLQSK (SEQ ID NO:29), RRKALQSK (SEQ ID NO:30), RRTALQCK (SEQ ID NO:31) and RRASLQCK (SEQ ID NO:32).

32. An IL-16 antagonist peptide comprising a sequence selected from the group consisting of RRTSLQCKQTTASADS (SEQ ID NO:34), RRASLQSKETTAAGDS (SEQ ID NO:35), RRKALQSKETTAAGDS (SEQ ID NO:36), RRTALQCKQTTASADS (SEQ ID NO:37) and RRASLQCKQTTASADS (SEQ ID NO:38).

33. An isolated nucleic acid molecule coding for any one of the peptide of Claims 1-4, 6, 14 or 22.

34. An antibody raised against the peptide of any one of Claims 1-4, 6, 14 or 22.

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35. A pharmaceutical composition comprising the peptide of any of Claims 1-4, 6, 14 or 22 and a pharmaceutically acceptable carrier.

36. A pharmaceutical composition comprising the antibody of Claim 34.

5 37. A method of treating an IL-16 mediated disorder in a subject, comprising administering to the subject a therapeutically effective amount of the peptide of any of Claims 1-4, 6, 14 or 22 and a pharmaceutically acceptable carrier.

10 38. The method of Claim 37, wherein said IL-16 mediated disorder is an inflammatory disease selected from asthma, rheumatoid arthritis, inflammatory bowel disease, Graves' disease, multiple sclerosis, lupus or bullous pemphigoid.

15 39. The method of Claim 38, further comprising simultaneously administering an anti-inflammatory agent selected from an anti-CD4 antibody, an anti-TNF α antibody, NSAIDS, steroids, cyclosporin-A or a cytotoxic drug.

20 40. An IL-16 antagonist.

25 41. A pharmaceutical composition comprising an IL-16 antagonist and a pharmaceutically acceptable carrier.

42. A method of treating an IL-16 mediated disorder comprising blocking the interaction of IL-16 with an IL-16 receptor by the administration of an IL-16 antagonist.